ORIGINAL

EXCEPTION

0000174800

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

DOUG LITTLE, Chairman
BOB STUMP
BOB BURNS
TOM FORESE
ANDY TOBIN

IN THE MATTER OF THE COMMISSION'S INVESTIGATION OF VALUE AND COST OF DISTRIBUTED GENERATION.

Docket No. E-00000J-14-0023

RESIDENTIAL UTILITY CONSUMER OFFICE'S EXCEPTIONS

TO

RECOMMENDED OPINION AND ORDER

The Residential Utility Consumer Office ("RUCO") submits the following Exceptions to the Recommended Opinion and Order ("ROO").

Summary.

RUCO commends Judge Jibilian for the thoughtful Order. However, some clarification and direction is needed to ensure successful implementation and a timely conclusion of Phase 2 rate cases. RUCO is offering two amendments that accomplish this and do not limit options that the Commission may want to consider in other proceedings. Below is a summary of those modifications. Detailed rationale for the following refinements can be found later in the document.

1. Designate Resource Comparison Proxy ("RCP") as the primary valuation methodology to inform the immediate round of rate cases. To correct a weighting error in the ROO, embed a 10% yearly decline in the starting RCP figures presented on pages 116-117 of the ROO to account for technology cost declines. These numbers and their associated decline will guide Phase 2. As the ROO stated, the RCP figures will be updated to the extent possible within rate cases to ensure the steps downs reset at the most up to date utility scale prices.
2. The RCP shall not include storage related costs involved in future solar + storage acquisitions utilities may make. The RCP also should not include solar arrays intended for R&D purposes.
3. Findings in the ROO <u>can</u> (but are not required to) apply to both exports as well as self-consumption of the PV system's output.

4. Within three years (in anticipation for the next rate case cycle), a 5 to 20 year avoided cost model should be created by Staff or under Staff direction with the results considered by the Commission, including how to weigh both methodologies (avoided cost and RCP).
5. The ROO mentions some implementation details for Phase 2 and beyond. RUCO thinks it is extremely important to add the following: Compensation should not be higher than current residential retail rates, as of the date of this decision. Once the 5-year avoided cost method is approved, it can serve as a floor if deemed appropriate. Finally, to provide certainty to solar adopters, if the value methodology directly informs their compensation level, they should be locked into the "sign-up date" valuation level for 20 years.

These clarifications and added direction will successfully conclude this phase of the docket and avoid further contention around methodology, all while setting parties up for success in Phase 2. In the longer-term, using both the RCP and longer-term avoided cost methods will help the Commission merge value based and cost based considerations, when defining appropriate levels of DG compensation.

Introduction.

The ROO authored by Judge Jibilian is thoughtful and fair. The nearly three year process has been long, difficult, and frankly exhausting. Many other states are currently struggling to do the same thing because there is no blue print for doing so. RUCO is very

appreciative of Judge Jibilian's recommendations. The recommendations are based on well-reasoned conclusions. By recommending a bold new way to value renewable energy, Arizona will once again be a proactive leader in smart renewable energy policy.

RUCO has organized its exceptions as follows;

1. Significant positions in the ROO where RUCO is not in full agreement;
2. Changes to the ROO that will result in a better outcome for all parties; and
3. Significant positions in the ROO where RUCO is in full agreement.

1) Significant Positions In The ROO Where RUCO Is Not In Full Agreement

There are several aspects of the ROO that RUCO would recommend be clarified or modified. First, RUCO would like to highlight one fairly significant oversite of the RCP method as described in the ROO. In developing the RCP for each utility, when "[p]rojects of recent vintage are not available for the utility, Staff shall use pricing data from available industry sources for grid-scale solar PV projects, with priority given to projects in Arizona to the extent available." This is a very common sense solution to a very likely problem. However, this leaves the question of how the RCP method uses the pricing data. Currently, the RCP weights each PPA based on characteristics of the PPA. One of the key weightings of the RCP is based on the size of the PPA. However, when only "pricing data" is used, there is no PPA size characteristic to properly weight the resource, thus **the current method underpinning the RCP formula is unable to account for this shortcoming**. In addition to this shortcoming, Staff has been reluctant to agree to update this methodology on a yearly basis.

The second question is how updating actually gets carried out. "A five year rolling weighted average of a utility's solar PPAs and utility-owned solar generating resources used as a proxy for purposes of valuation of solar DG exports is reasonable if the valuation is re-assessed in each electric utility rate case." VOS ROO at 167. The ROO uses the language "five year rolling weighted average," but then states that one can only evaluate the changes to the market in each rate case. VOS ROO at 151. The hallmark of the RCP is that it is built on a cost based approach, specifically the utility scale solar market, which changes yearly. RUCO believes that maintaining these yearly market based pricing adjustments are critical to maintaining the integrity of the RCP

By selecting a method that relies on market principles and then promptly locking those market principles between rate cases, many of the benefits that made the RCP the "most reliable and objective" methodology are lost. The ROO states that gradualism is the reason for only changing the compensation rate in between rate cases. RUCO believes that only changing compensation rates during a rate case, is actually contrary to the principle of gradualism. As an example, under the method of only changing the rate in a rate case (assuming 4 years between rate cases) the compensation under the RCP could look something like this. Year 1- $11 c/kWh, Year 2 - $11 c/kWh, Year 3 - $11 c/kWh, Year 4 - $11 c/kWh, and Year 5 - $5 c/kWh. This method would result in four years of $11 c/kWh and then a drop to $5 c/kWh. If a true five year rolling average, that changes yearly, is adopted, the compensation rate of the RCP could look like this. (Illustrative purposes only) Year 1- $11 c/kWh, Year 2 - $9.5 c/kWh, Year 3 - $8 c/kWh, Year 4 - $6.5 c/kWh, and Year 5 - $5 c/kWh. There is a not so gradual decrease from $11 cents to $5 cents.

Using the proposed method, of only modifying compensation rates in rate cases, is not consistent with the principle of gradualism. The solar industry will gladly accept four years at a near retail rate, because at the end of those years, when the rate is scheduled to drop by over 50%, they will come back seeking a lesser percentage decrease, so as to not "kill solar." RUCO believes yearly step downs should be maintained as part of the RCP. However RUCO is still concerned that the RCP has the potential to drop too far, too fast, so as to not meet the "gradual transition" desired in the ROO. VOS ROO at 167.

RUCO agrees with the ROO, which states a "[l]ong-term forecasts should not be used to establish the value of DG, due to the risk of inclusion of speculative benefits and costs." VOS ROO at 166. RUCO's initial proposal was a 20 year avoided cost methodology that did not include these types of speculative benefits and costs. RUCO's reasoning for proposing a 20 year avoided cost methodology was to set the highest range of possible value for DG, but then to set the compensation rate below the 20 year avoided cost, to provide value to ratepayers and align more closely with cost based principles. RUCO Br. at 10-11, citing to Tr. at 1483 (RUCO witness Lon Huber). RUCO Br. at 11. Getting closer to cost based compensation, while not ignoring potential value and letting the compensation rate move too low, is important.

RUCO does believe that developing a 20 year Avoided Cost methodology to use as a "tool to help the Commission make reasonable and rational decisions" is a worthwhile endeavor. This tool should not be used to set the compensation rate, rather it should be used to inform the Commission and provide context. Vote Solar agrees with this assertion. Vote Solar Br. at 8-9, 12. By developing a model that calculates the ROO recommended 5 year Avoided Cost, with the capability of calculating 10, 15, and a 20 year Avoided Cost,

would be relatively simple. These data points would be a valuable tool for the Commission and will likely play a critical role in informing the actual compensation rate for solar generation. Below RUCO will propose some ways in which the Commission may use the output of the Avoided Cost model once it has been developed.

2) Proposed Changes To The ROO That Will Result In A Better Outcome For All Parties

In response to many of the criticisms stated above, the following are RUCO's proposed modifications to the ROO with the goal of using as much of the ROO as possible, while still creating a fair and gradual transition to the actual compensation rate for exported DG.

Brief Overview

Step 1 – Implement the RCP Methodology now, using the calculated RCP in this proceeding as a starting point (10.9 cents/kWh for APS and 11.1 cents/kWh for TEP/UNS), and implement common sense automatic yearly step downs of 10%, which aligns to historical technology cost declines. VOS ROO at 116-117. Allow these rates to guide value for all production of a solar PV system.

Step 2 – Implement a process to develop and approve a model to calculate a 5, 10, 15, and 20 year Avoided Cost methodology within three years in anticipation of the next rate case cycle. Once the model is approved by the Commission, the 10, 15, and 20 year Avoided Cost could then be used as a tool to help the Commission make reasonable and rational decisions when setting compensation rates. The Commission may find it appropriate to create a blended average, using the RCP and the 20 year Avoided Cost, to

make use of both methodologies. The Commission could then set the 5 year Avoided Cost as the final, or lowest compensation rate a DG customer would receive.

Detailed Plan

RUCO proposes to immediately incorporate the RCP methodology as a guide for compensation. The first year will be set as, the value stated in the ROO for each utility. By agreeing to use the RCP values contained in the ROO as a starting point, litigation will be minimized, specifically for Phase 2 of UNS Electric's and TEP's rate case. Using the RCP as a starting point, automatic yearly step downs should be created to 1) capture yearly cost declines, 2) resolve the data dilemma outlined above, 3) guard against the RCP dropping too far, too fast, and 4) provide a predictable and stable transition to a blended average between the RCP and a longer-term avoided cost method. RUCO proposes to use a common sense yearly step down of 10%. This percentage is consistent with the historical utility scale installation cost declines of 9.7% calculated using NREL data.[1] Consistent step downs, such as this, will guard against litigation over setting the Value of Solar each year. It will also remove the administrative burden from Staff of being required to develop the RCP annually or at each rate case. Below is an example of RUCO's proposed step downs.

---

[1] Fu R, Chung D, Davidson C, Lowder T, Feldman D, Ardani K, Margolis R. U. S. Solar Photovoltaic System Cost Benchmark: Q1 2016, NREL Technical Report, Published September 2016, at 33. (attached as Exhibit A)

Resource Comparison Proxy (RCP) w/ 10% Declines					
	APS		**TEP/UNS**		
Year 1	$	0.109	$	0.111	kWh
Year 2	$	0.098	$	0.100	kWh
Year 3	$	0.088	$	0.090	kWh

Once the RCP is in place, a process to develop an Avoided Cost model should be implemented by the Commission. This should take place over the next three years or before the next rate case cycle. Because the RCP will already be in place, there is no need for a hurried process to develop a model for calculating the avoided cost. Time can be spent to make sure that the model is correct. The model should include calculations for both a 5, 10, 15, and 20 year terms that includes the cost and benefit categories from Schedule A of the ROO. In addition to the costs and benefits included in Schedule A of the ROO, the Avoided Cost methodology should also account for negative market pricing and resource curtailment.

To stay consistent with the ROO, Staff should develop or hire an independent expert to develop the model ensuring that all assumptions and inputs are publicly available for other parties to comment. The process should include check-ins, deadlines, and a comment period. The model should be developed in such a way that it becomes an automatic methodology like the MCCCG. The model should ultimately be approved by the Commission. Along with approving the model, the Commission will determine the appropriate implementation (i.e., implement immediately, do nothing, next annual step down, next rate case, etc.). RUCO recommends the 5 year Avoided Cost be adopted as

the floor or the lowest compensation rate a DG customer would receive. This allows the RCP and possibly the 20 year Avoided Cost methodology to be implemented together in such a way as to create a "glide path" to the 5 year Avoided Cost. A Commission vote on the Avoided Cost methodologies, implementations (if any) and weightings (if any) should occur within three years and before the next round of each utilities rate cases.

Whether or not the Commission agrees to RUCO's proposed implementation, a critical aspect of the RCP is what utility scale assets are included in the model. Solar + storage is the next phase of renewable energy. Utilities across the country are already in the process of entering into PPA's that include both solar and storage. It is critical that these assets not be used in the RCP calculation. By its nature, a solar + storage PPA will be higher than a solar only PPA, because of the extra services being purchased. If solar + storage PPA's were to be used in the RCP, rooftop solar customers would receive a higher compensation rate because of the higher priced PPA's. Utilities will likely be reluctant to enter into solar + storage PPA's as a result. Utilities should not be discouraged from entering into PPA's for solar + storage, so as to not increase rooftop solar compensation. Similarly, the RCP should not include PPA's utilities enter into for solar arrays intended for R&D purposes. These types of PPA's would also likely increase the compensation because of the increased costs. Utilities should not be discouraged from entering into these types of contracts for fear of overpaying rooftop solar customers.

The ROO attempts to limit the methodology to only apply to DG exports. RUCO strongly urges the Commission to allow the methodology that is approved in this docket to apply to both DG exports and DG self-consumption. There seems to be confusion over the purpose of this docket. Many of the arguments against applying the methodology in this

docket to both DG exports and DG self-consumption, seems to be more related to the compensation structures and rates, not the value of each. RUCO believes the purpose of this docket is to create a methodology for valuing solar production, both DG exports and DG self-consumption, rather than set a compensation rate. Whether or not the compensation rate applies to exports or self-consumption should be part of a rate case, where the actual compensation rate will be set.

Allowing the methodology to apply to both exports and self-consumption will keep us all from litigating this issue in the near future. Here's why, using a simple scenario and assuming the methodology only applies to exports, if in a utility's next rate case the export rate is set to the RCP rate of 11.1 cents/kWh, and the utility proposes a rate plan with a 5.9 cents/kWh offset (self-consuming rate), what will happen? The solar industry will argue that 5.9 cents/kWh is too low of compensation because it is less than half the price of the export rate of 11.1 cents/kWh. The utility will argue that it is priced correctly because it is based on proper rate design principals, and cost of service analysis. How will the parties value the DG self-consumption portion of the rate? There will be no methodology to value DG self-consumption, because this three year protracted Value of Solar docket will have only valued half the solar production, exports. A new proceeding will have to be convened, one closely mirroring this proceeding, this time to develop a methodology for valuing self-consumption.

There is little sense in only valuing half of power generated by DG customers. At least two Commissioners alluded to this in their letters to this and other dockets. The best solution is to simply allow the methodology developed in this proceeding to apply both DG exports and DG self-consumption. Then, in the subsequent rate cases, at least a valuation

method will be in place to aid in setting the compensation rate, whether it applies only to exports or to both. **Following RUCO's suggestion will put more control in the Commission's hands and avoid a complex web of different proceedings that each tackle only half of a PV system's production.**

Implementation Details

The ROO makes many recommendations for implementation, from only evaluating changes in the methodologies at rate cases to grandfathering. The likely reason why is that implementation of the methodology is almost as important as the methodology itself. For this reason, RUCO is proposing a number of implementation details as well. These details are critical to a successful implementation of the Value of Solar methodology.

To start, compensation should not exceed the volumetric portion of the default residential rate for each utility, which is a customer with average energy consumption, as of the decision date of the Value of Solar docket. This will act as the ceiling or highest point of DG compensation.

Because the compensation rate will be gradually transitioning, until the Avoided Cost is implemented, DG customers taking service under the standalone RCP compensation structure will be locked into the rate for 20 years. The rate lock-in will follow the system rather than the customer in the event of a change in ownership. The purpose for this is similar to the principle of grandfathering. For the foreseeable future, the compensation rate for DG customers will be changing. Such volatility will likely be fatal to solar installations in the state, at least until the rate stabilizes. By locking the rate in during the transition period, needed certainty for solar installations will be achieved. The

Commission can readdress whether they want to continue locking in the rate when the Avoided Cost methodology is implemented.

Like the RPS Credit option recently approved in the UNS Electric rate case, RUCO recommends that the methodology be allowed to inform either exports measured on hourly basis, or the customer's entire generation.

3) Significant Positions in the ROO Where We Are In Full Agreement

The ROO contains a number of very significant and positive policy statements such as addressing net metering banking which according to the ROO 'should eventually be eliminated and replaced'. Further, 'the valuation should be used to inform compensation,' which is consistent with RUCO's position that compensation for DG should not be necessarily directly linked to "value," but instead used as a guide to help inform compensation levels. Next, the ROO states that 'there is a need for a valuation of DG methodology that will provide a gradual transition away from the current net metering model.' RUCO supports the use of a gradual transition away from the current net metering model to something closer to cost based payments (e.g. the minimum amount ratepayers must pay that still is sufficient to procure DG). The difficult part is developing a transition that moves quick enough to give much needed relief to non-DG ratepayers who are currently subsidizing DG ratepayers, yet gradual enough to allow the solar industry to evolve and thrive in a subsidy free environment.

The ROO found that the "[v]aluation of DG exports should be based on an avoided cost methodology." There is no industry standard avoided cost methodology for valuing DG. One could argue that developing a specific avoided cost methodology was the original intent of this docket. A number of avoided cost methodologies were proposed and

evaluated as part of this proceeding. The ROO settles on a more traditional 5-year avoided cost methodology and a type of avoided cost proxy, the RCP.

The ROO states, as a general policy, the "[u]se of utility-scale solar obligations represents the most reliable and objective avoided cost proxy for rooftop solar and diminishes concerns for the inclusion of societal and environmental factors and other externalities in valuing solar DG exports." By recommending both the RCP, a market informed cost based approach, and the 5-Year Avoided Cost, a value based approach, the Judge has signaled that each approach is suitable for valuing solar DG exports. However, based on the policy statement above, the ROO finds that the RCP, which is a based on "utility-scale solar" contracts is "the most reliable and objective" for "valuing DG exports." RUCO believes this is the most significant policy statement in the ROO because it establishes that a cost based approach, using utility-scale solar contracts, is more reliable and objective than a value based approach, such as the five year Avoided Cost. Next the ROO makes a general policy statement that "[r]ooftop solar DG customers are partial requirements customers who export power to the grid." VOS ROO at 169. RUCO has been arguing this point for years. RUCO fully supports this policy decision and looks forward to continue advocating for placing partial requirement DG customers in separate rate classes.

RUCO supports the policy statement concerning grandfathering. In reality, the policy statement likely did not need to be part of this proceeding. Using an often quoted line from the solar industry "it should be a Phase 2 issue," as it is not part of developing a methodology for valuing solar. With that said, RUCO has always supported grandfathering existing DG customers. However, RUCO also believes that solutions moving forward should not be reliant on the Commission grandfathering future DG customers.

RUCO generally does not get involved with issues related to Cooperatives. Because of the overlap in this proceeding, RUCO takes no position on the policy statement, giving flexibility to Cooperatives.

Finally, the ROO posits that the "[e]nvironmental benefits and costs of DG should be considered in an avoided cost forecast, but should not be duplicated if they are already considered in the IRP process and in operating costs." VOS ROO at 166-167. RUCO vigorously supports this statement. RUCO also recommends that costs related to negative pricing and curtailment should also be included in any avoided cost forecast. This will ensure that ratepayers are not paying for the same resource twice.

Conclusion

For the reasons stated above RUCO believes the Commission should adopt its recommendations.

RESPECTFULLY SUBMITTED this 15th day of November, 2016.

Jordy Fuentes
Counsel

RUCO AMENDMENT 1

INCLUSION OF SELF-CONSUMPTION AND EXPORTS IN THE VALUE OF DG

Summary: Approval of this amendment will allow the methodology for valuing DG to apply to both exports and self-consumption for energy produced by DG customers. Setting the actual compensation rate and deciding whether or not to apply the compensation rate to exports or self-consumption, will be determined in each utility's rate case.

Page 166, Lines 19, 20

DELETE: "exports"

Page 166, Lines 21

DELETE: "for their exports"

Page 166, Lines 23, 24, 25

DELETE: "exports"

Page 167, Lines 8, 11, 13, 16

DELETE: "exports"

Page 170, Line 10, 14, 19

DELETE: "exports"

Page 171, Line 3

DELETE: "export"

****Make all conforming changes**

RUCO AMENDMENT 2

FUTURE ASSESSMENT AND EVALUATION OF THE VALUE OF DG

Summary: Approval of this amendment will result in the approval of RUCO's proposed changes to the ROO which include 1) implement the RCP with 10% yearly step downs to start the transition to the actual value of solar, 2) develop a process to develop and approve a model to calculate the 5, 10, 15, and 20 year Avoided Cost, 3) use the 5 year Avoided Cost as the lowest compensation a DG customer will receive while using current retail rates as the maximum cap, 4) lock in DG customers for 20 years, and 5) exclude certain utility scale assets from being included in the RCP.

Page 166, Line 21

After "customers." INSERT: "Compensation should not exceed the volumetric portion of the default residential rate for each utility which is a customer with average energy consumption as of the decision date of the Value of Solar docket."

Page 166, Lines 20

INSERT: "both exports and self-consumption"

After "rates" INSERT: "measured on an hourly basis"

Page 166, Line 26

After "be" INSERT: "the primary methodology"

Page 167, Line 18

DELETE: "143. A re-assessment of the value of DG in each electric utility rate case in order to inform compensation rates to be paid for DG exports precludes the need for the implementation of a separate step-down mechanism."

Page 167, Line 22

DELETE: "both"

Page 167, Line 25

After "years)." INSERT: "In addition, the use of Staff's Avoided Cost methodology with forecasting views of 10, 15, and 20 years, are also valuable tools and should be evaluated and considered by the Commission when setting the valuation of DG."

DELETE: "both"

INSERT: "a methodology based on"

Page 168, Line 1

After "Exhibit A" INSERT: "in addition to the costs and benefits related to negative market pricing and resource curtailment"

Page 168, Line 7

After "parties." INSERT: "The development of the electronic spreadsheet and its implementation will occur within the next three years in anticipation of the next cycle of rate cases. The Commission will decide how to implement it and what weight it shall receive. In the interim the Resource Comparison Proxy methodology will serve as the methodology for the valuation of DG. Customers taking service prior to the implementation of the Avoided Cost methodology. Customers should be locked into their compensation rate, to the extent it is directly derived from the valuation, for 20 years. The rate lock should apply to the system not the owner."

Page 168, Line 12

DELETE: "If projects of recent vintage are not available for the utility, Staff shall use pricing data from available industry sources for grid-scale solar PV projects, with priority given to projects in Arizona to the extent possible."

Page 168, Line 17

After "parties." INSERT: "It is inappropriate for utility scale assets that are related to solar + storage and other solar arrays for R&D purposes to be included in the calculation of this methodology. Using the values calculated using the electronic spreadsheet and referenced in herein a 10% step down shall be applied thereby reducing each year by 10% until the next rate case when the methodology will be reset."

Page 168, Line 19

DELETE: "value of DG methodologies rely"

INSERT: "Resource Comparison Proxy methodology relies"

Page 170, Line 14

After "described" INSERT: "in the Determinations"

Page 170, Line 17

DELETE: "value of DG methodologies rely"

INSERT: "Resource Comparison Proxy methodology relies"

Page 170, Line 18

After "forth" INSERT: "in the Determinations"

Page 170, Line 19

After "described" INSERT: "in the Determinations"

**** Make all conforming changes**

AN ORIGINAL AND THIRTEEN COPIES
of the foregoing filed this 15th day
of November, 2016 with:

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

COPIES of the foregoing e-mailed/mailed this 15th day of November, 2016 to:

Maureen Scott
Matthew Laudone
Legal Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007
tford@azcc.gov
rlloyd@azcc.gov
tbroderick@azcc.gov
mlaudone@azcc.gov
mscott@azcc.gov
Consented to Service by Email

Dillon Holmes
Clean Power Arizona
9635 N. 7th Street, #47520
Phoenix, Arizona 85068
dillon@cleanpoweraz.org
Consented to Service by Email

C. Webb Crockett
Patrick Black
Fennemore Craig, P.C.
2394 E. Camelback Road, Suite 600
Phoenix, Arizona 85016-3429
wcrockett@fclaw.com
pblack@fclaw.com
Consented to Service by Email

Garry Hays
Law Offices of Garry D. Hays, PC
2198 E. Camelback Road, Suite 305
Phoenix, Arizona 85016
Attorney for Arizona Solar Deployment Alliance

Court Rich
Rose Law Group, PC
7144 E. Stetson Dr., Suite 300
Scottsdale, Arizona 85251
Attorneys for The Alliance for Solar Choice
CRich@RoseLawGroup.com
Consented to Service by Email

Timothy Hogan
Arizona Center for Law in the Public Interest
514 W. Roosevelt St.
Phoenix, Arizona 85003
Attorneys for Vote Solar and Western Resource Advocates
thogan@aclpi.org
rick@votesolar.org
briana@votesolar.org
ken.wilson@westernresources.org
cosuala@earthjustice.org
mhiatt@earthjustice.org

Craig Marks
Craig A. Marks, PLC
10645 N. Tatum Blvd., Suite 200-676
Phoenix, Arizona 85028
Attorney for Arizona Utility Ratepayer Alliance
Craig.Marks@azbar.org
Consented to Service by Email

Meghan Grabel
Osborn Maledon, PA
2929 N. Central Ave., Suite 2100
Phoenix, Arizona 85012
mgrabel@omlaw.com
gyaquinto@arizonaaic.org
Consented to Service by Email

Jennifer Cranston
Gallagher & Kennedy, PA
2575 E. Camelback Rd., Suite 1100
Phoenix, Arizona 85016
Attorneys for Grand Canyon State Electric Cooperative Association, Inc.
Jennifer.cranston@gknet.com
Consented to Service by Email for Grand Canyon State Electric Cooperative Association, Inc.
Also Attorney for Arizona Electric Power Cooperative, Inc. and Dixie Escalante Rural Electric Association, Inc., who have not consented to email service

Richard Adkerson
Ajo Improvement Company
333 N. Central Ave.
Phoenix, Arizona 85004

Gary Pierson
Arizona Electric Power Cooperative, Inc.
P.O. Box 670
1000 S. Highway 80
Benson, Arizona 85602

Thomas Loquvam
Thomas Mumaw
Mellissa Krueger
Pinnacle West Capital Corporation
P.O. Box 53999, MS 8695
Phoenix, Arizona 85072
Attorneys for Arizona Public Service Co.
Thomas.loquvam@pinnaclewest.com
Consented to Service by Email

Charles Kretek
Columbus Electric Cooperative, Inc.
P.O. Box 631
Deming, New Mexico 88031

LaDel Laub
Dixie Escalante Rural Electric Association
71 E. Highway 56
Beryl, Utah 84714

Steven Lunt
Duncan Valley Electric Cooperative
379597 AZ 75
P.O. Box 440
Duncan, Arizona 85534

Dan McClendon
Marcus Lewis
Garkane Energy Cooperative
P.O. Box 465
Loa, Utah 84747

William Sullivan
Law Offices of William P. Sullivan, PLLC
501 E. Thomas Rd
Phoenix, Arizona 85012
Attorneys for Garkane Energy Coop., Mohave Electric Coop., and Navopache Electric Coop.

Than Ashby
Graham County Electric Cooperative
9 W. Center St.
P.O. Drawer B
Pima, Arizona 85543

Tyler Carlson
Peggy Gillman
Mohave Electric Cooperative
P.O. Box 1045
Bullhead City, Arizona 86430

Roy Archer
Morenci Water and Electric Company, and Ajo Improvement Company
P.O. Box 68
Morenci, Arizona 85540

Charles Moore
Paul O'Dair
Navopache Electric Cooperative
1878 W. White Mountain Blvd.
Lakeside, Arizona 85929

Jeffrey Crockett
Crockett Law Group, PLLC
2198 E. Camelback Rd, Suite 305
Phoenix, Arizona 85016
Attorney for Sulphur Springs Valley Electric Cooperative
jeff@jeffcrockettlaw.com
kchapman@ssvec.com
jblair@ssvec.com
Consented to Service by Email

Vincent Nitido
Trico Electric Cooperative
8600 W. Tangerine Rd
Marana, Arizona 85658

Michael W. Patten
Timothy J. Sabo
Jason D. Gellman
Snell & Wilmer, LLP
One Arizona Center
400 E. Van Buren St., Suite 1900
Phoenix, Arizona 85004
Attorneys for Ajo Improvement Co., Morenci Water and Electric Co., Trico Electric Coop., Inc, Tucson Electric Power Co., and UNS Electric, Inc.

Bradley Carroll
Tucson Electric Power Company
88 E. Broadway Blvd, MS HQE910
P.O. Box 711
Tucson, Arizona 85701
mpatten@swlaw.com
BCarroll@tep.com
docket@swlaw.com
Consented to Service by Email

David Hutchens
Kevin Larson
UNS Electric, Inc.
88 E. Broadway Blvd, MS HQE910
P.O. Box 711
Tucson, Arizona 85701

Patricia Ferre
P.O. Box 433
Payson, Arizona 85547

Nancy Baer
245 San Patricio Drive
Sedona, Arizona 86336

Tom Harris
Arizona Solar Energy Industries Assoc.
2122 W. Lone Cactus Dr., Suite 2
Phoenix, Arizona 85027
Tom.Harris@AriSEIA.org
Consented to Service by Email

Lewis Levenson
1308 E. Cedar Lane
Payson, Arizona 85541

Nicholas Enoch
Lubin & Enoch, P.C.
349 N. Fourth Ave.
Phoenix, Arizona 85003
Attorneys for IBEW Locals 387, 1116 & 769

Susan Pitcairn
Richard Pitcairn
1865 Gun Fury Rd
Sedona, Arizona 86336

By Cheryl Fraulob
Cheryl Fraulob

EXHIBIT A

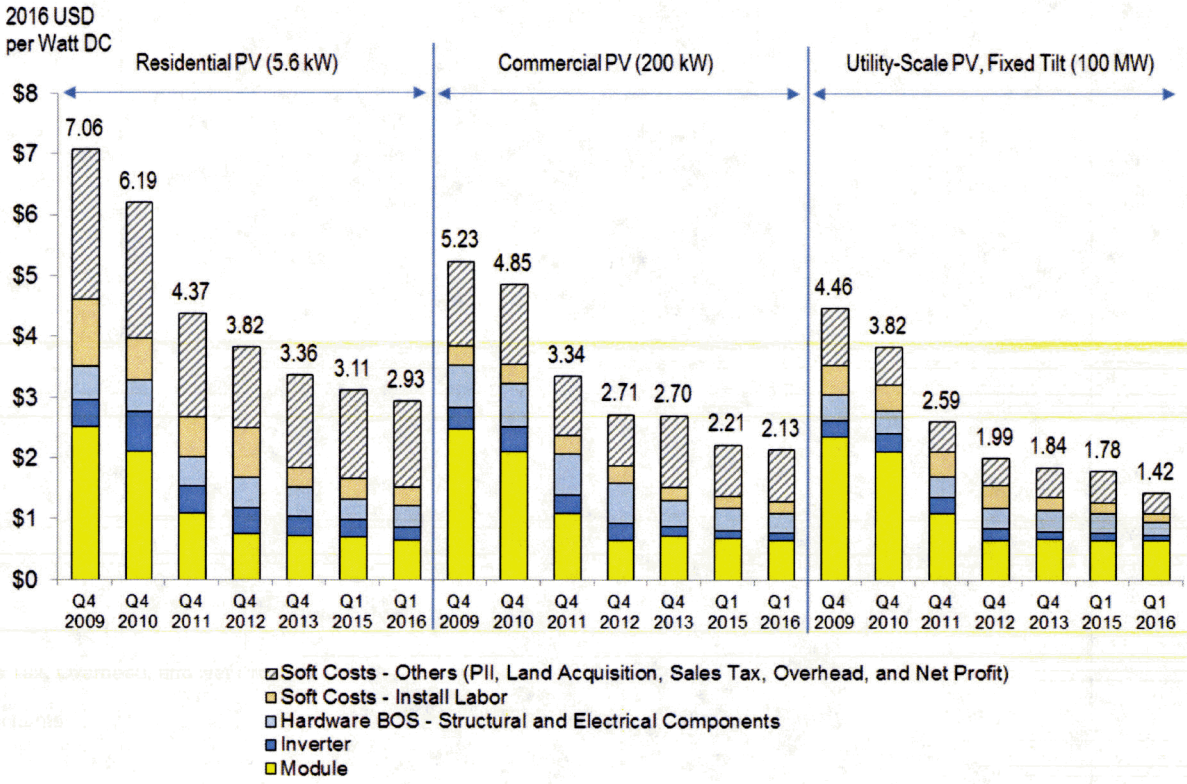

Figure 25. NREL PV system cost benchmark summary (inflation adjusted), Q4 2009–Q1 2016